

REMARKS

By this Amendment a supplemental page 16 is proposed which contains an abstract of the disclosure. Entry is requested.

A Letter Re Drawings has also been filed.

In the outstanding Office Action the examiner has rejected claims 1-7 under 35 U.S.C. 103(a) as being unpatentable over Goodings in view of Soli.

The inventors believe this rejection is without merit.

Goodings discloses a hearing aid which includes a filter in an electrical feedback path. However, this patent does not teach the use of feedback detection means comprising bandwidth detection means. The bandwidth mentioned in column 8, line 26 relates to the bandwidth of the noise signal used, and it is specified that the noise signal has about the same bandwidth as the hearing aid as a whole. In this case a bandwidth for the noise signal is specified in the range from 300 Hz to 7kHz, supposedly the conventional bandwidth of a hearing aid. Such a broadband noise generator cannot be regarded as a bandwidth detection means.

As to the examiner's argument that the two different adaptation modes are readily arrived at by combining the teachings of Goodings and Soli, the inventors do not agree. Goodings teaches imposing different adaptation rates depending on whether the hearing aid has just been switched on or has passed a settling period. Nothing here points in the

direction of means for detecting the presence of feedback and use such means to control the adaptation mode selection.

With regards to the Soli patent, a variable adaptation rate of the adaptive filter used in the feedback suppression circuit is not disclosed. Thus, the person of ordinary skill could not learn from this document how the adaptation rate should be changed in order to achieve feedback cancellation at all conditions.

As stated in the present application, it is an object of the invention to provide a method which improves the result of a feedback cancellation by having fewer audible side effects and thereby result in improved user comfort. According to the invention, this is achieved by the bandwidth detection means, which in a safe and secure manner detects the presence of feedback signals, and use this detection to choose between a level independent and a level dependent adaptation speed of a LMS algorithm for generating filter coefficients. A feedback signal often appears as a howling tone from the receiver. Such a howling tone is a narrow band signal. The invention takes advantage of this fact in that it comprises the bandwidth detection means to determine whether a feedback signal is developing. Thereby it is assured that only signals with the characteristic of the feedback signal are detected as such, and fewer false detection of feedback will occur.

Neither of the cited references discloses the use of bandwidth detection means for determining the presence of feedback. Also such

detection means could not in any obvious way be derived from the combined teachings of the two cited patents.

Favorable reevaluation is requested.

Respectfully submitted,

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ABSTRACT OF THE DISCLOSURE

A method for canceling feedback in an acoustic system including a microphone, a signal path, a speaker and means for detecting presence of feedback between the speaker and the microphone, the method including providing an LMS algorithm for processing the signal; where the LMS algorithm operates with a predetermined adaptation speed when feedback is not present; where the LMS algorithm operates an adaptation speed faster than the predetermined adaptation speed when feedback is present, and where the means for detecting the presence of feedback is used to control the adaptation speed selection of the LMS algorithm, where the feedback detection means comprises bandwidth detection means for determining the presence of a feedback signal.